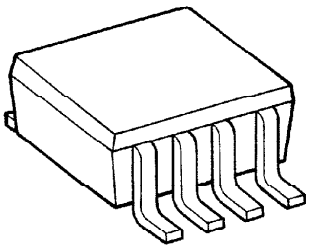
TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC3W03FU

CRYSTAL OSCILLATOR

The TC3W03FU is a IC for high speed CMOS crystal oscillator fabricated with silicon gate C^2MOS technology. It can be used to make high efficient crystal oscillator with certain output signal by added external crystal oscillation unit, some capacitor and resistor.
It has selective 4-step (f_0, $1/2f_0$, $1/4f_0$, $1/8f_0$) frequency devide down function.
And by setting the disable oscillate input (CE) to low level, the output (Q) becomes high impedance.
All inputs are equipped with protection circuits against static discharge or transient excess voltage.



SSOP8-P-0.65

Weight : 0.02g (Typ.)

FEATURES

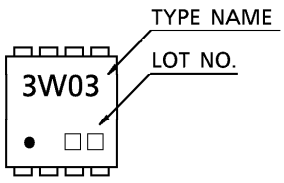
- Wide oscillation frequency range ··· f_{osc} = 1MHz~40MHz
- Incorporated frequency devide down step
  ··· selective f_0, $1/2f_0$, $1/4f_0$ or $1/8f_0$
- 3-state output
- Output drive capability ··· 10 LSTTL loads
- Very small package

MAXIMUM RATINGS

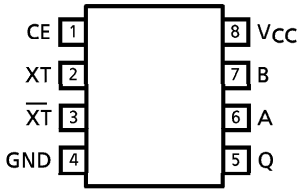
PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage Range	V_{CC}	−0.5~7.0	V
DC Input Voltage	V_{IN}	−0.5~V_{CC}+0.5	V
DC Output Voltage	V_{OUT}	−0.5~V_{CC}+0.5	V
Input Diode Current	I_{IN}	±20	mA
Output Diode Current	I_{OUT}	±25	mA
Power Dissipation	P_C	300	mW
Storage Temperature	T_{stg}	−65~150	°C
Lead Temperature (10s)	T_L	260	°C

(Note)
This IC is used only for crystal oscillation. So, this is unfit for DC~low frequency range operation and frequency devide down.

MARKING



PIN ASSIGNMENT (TOP VIEW)



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TRUTH TABLE

INPUTS			OUTPUTS
CE	A	B	Q
H	L	L	f_o
	L	H	$1/2f_0$
	H	L	$1/4f_0$
	H	H	$1/8f_0$
L	Don't care		Z

Z : High impedance

PIN DESIGNATIONS

PIN NO.	SYMBOL	FUNCTION
1	CE	Disable oscillate and Reset
2	XT	Connect to crystal unit dvide down step.
3	$\overline{XT}$	Connect to crystal unit dvide down step.
4	GND	Ground
5	Q	Output
6	A	Select for devide down ratio
7	B	Select for devide down ratio
8	V_{CC}	Supply voltage

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V_{CC}	5 ± 0.5	V
Input Voltage	V_{IN}	0~V_{CC}	V
Operating Temperature	T_{opr}	−45~85	°C

DC ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CIR-CUIT	TEST CONDITION	Ta = 25°C			Ta = −40~85°C		UNIT
				MIN.	TYP.	MAX.	MIN.	MAX.	
High-Level Input Voltage	V_{IH}	—	V_{CC} = 5V	3.5	—	—	3.5	—	V
Low-Level Input Voltage	V_{IL}	—	V_{CC} = 5V	—	—	1.5	—	1.5	V
High-Level Output Current	I_{OH}	—	V_{CC} = 5V	−4.0	—	—	−3.8	—	mA
Low-Level Output Current	I_{OL}	—	V_{CC} = 5V	4.0	—	—	3.8	—	mA
High-Level Input Current	I_{IH}	—	CE = A = B = V_{CC}	—	—	0.1	—	1.0	μA
Low-Level Input Current	I_{IL}	—	A = B = GND	—	—	−0.1	—	−1.0	μA
Quiescent Supply Current	I_{CC}	—	CE = V_{CC}, A = B = GND	—	—	1.0	—	10	μA
Stand by Current	I_{STN}	—	CE = GND	—	—	500	—	700	μA
3-State Output Off-State Current	I_{OZ}	—	A = B = V_{IH} or V_{IL} V_{OUT} = V_{CC} or GND	—	—	±0.5	—	±5.0	μA
Builtin Pull-up Resistor	R_{CE}	—	—	154	220	286	154	286	kΩ

AC ELECTRICAL CHARACTERISTICS (V_{CC} = 5V, Ta = 25°C)

PARAMETER	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	$I_{CC\,(opr)}$	—	See application circuit	—	—	22	mA
Operating Frequeny Range	f_{opr}	—	See application circuit	1.0	—	40	MHz
Output Wave form Duty	Duty	—	See application circuit	45	50	55	%

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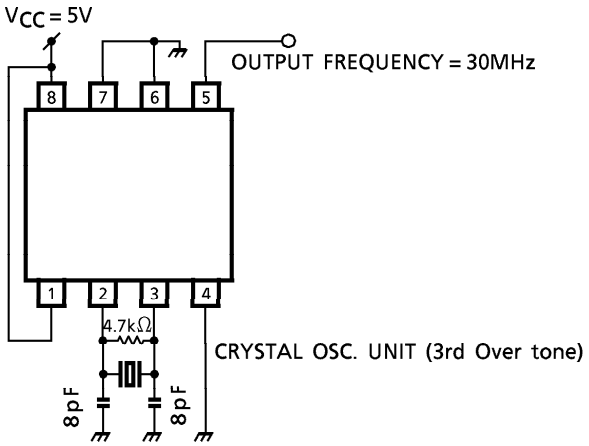
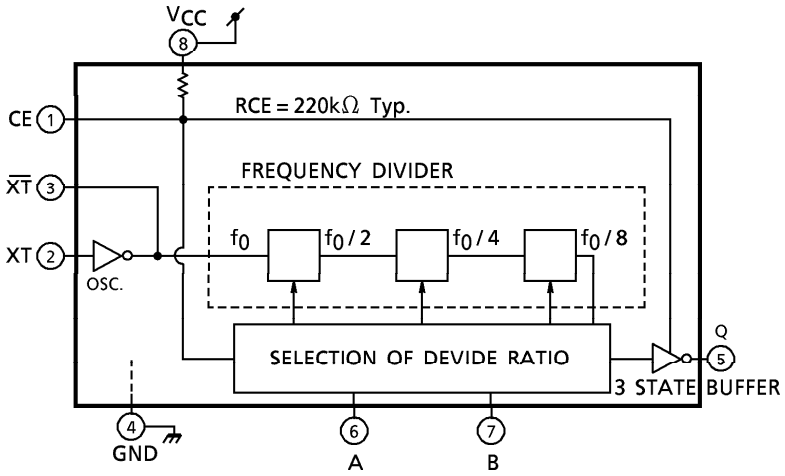
APPLICATION CIRCUIT (Example)



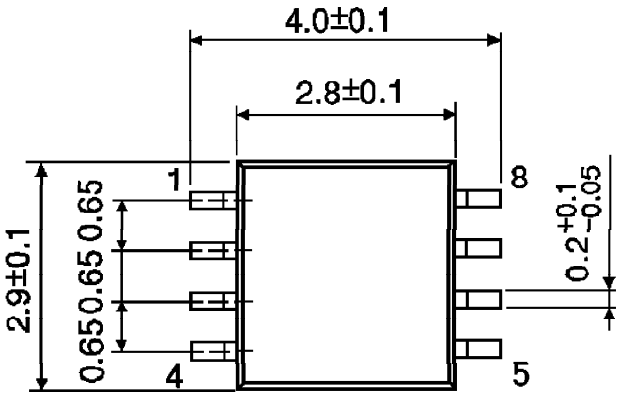
SYSTEM DIAGRAM

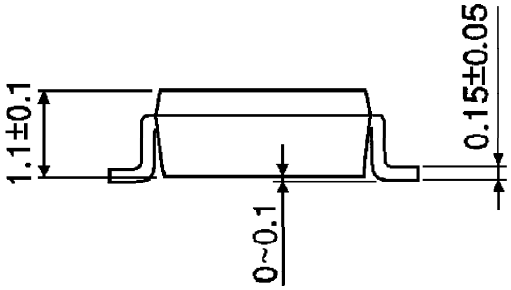


OUTLINE DRAWING

SSOP8-P-0.65

Unit : mm





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